



E. I. du Pont de Nemours and Company
Washington Works
Mail: P.O. Box 2800
Washington, WV 26181-2800

October 21, 2016

CERTIFIED MAIL - 7007 1490 0001 6676 7951
RETURN RECEIPT REQUESTED

Mr. W. Fred Durham, Director
Division of Air Quality
WV Department of Environmental Protection
601 57th Street
Charleston, WV 25304

RE: Permit Determination Request for Replacement of Salt Tanks, R13-0985

Dear Mr. Durham:

With this letter DuPont requests a permit determination regarding a 2015 replacement in-kind for a pair of storage tanks in the Salt Section of the Zytel® nylon resins production facility covered by permits R13-0985 and R30-10700001-2011 Segment 5 of 14.

The only changes needed for the Title V permit are updates to the tank descriptions in the Emission Units table. The corrections have been described in the permit renewal process which is nearing completion.

Should you have any questions or concerns regarding the actions described in this letter or any related matter, please contact me at 304-863-2202 or Chris Shoop at 304-863-2133.

Very truly yours,

C. R. Hill
SHE Manager
DuPont Washington Works

ENCLOSURE

CRH:ces/kdf

Copy: Michael Egnor, Permitter, WV DAQ ✓
Denton McDerment, Permitter, WD DAQ (cover only)



WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

**PERMIT DETERMINATION FORM
(PDF)**

FOR AGENCY USE ONLY: PLANT I.D. # _____

PDF # _____ PERMIT WRITER: _____

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):

E. I. du Pont de Nemours and Company

2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE):

Washington Works

3. NORTH AMERICAN INDUSTRY
CLASSIFICATION SYSTEM (NAICS)
CODE:

3252111

4A. MAILING ADDRESS:

DuPont Washington Works
P.O. Box 2800
Washington WV 26181-1217

4B. PHYSICAL ADDRESS:

DuPont Washington Works
8480 DuPont Road, Building 24
Washington WV 26181

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE **MAP AS ATTACHMENT A**): See Map - From Charleston take I-77 north to the Route 50. Turn West on to Route 50 and use the bypass around Parkersburg. At the DuPont Road Exit - exit and at DuPont Road turn Left. The plant is approximately ¼ - ½ mile on the right side.

5B. NEAREST ROAD:

DuPont Road

5C. NEAREST CITY OR TOWN:

Parkersburg

5D. COUNTY:

Wood

5E. UTM NORTHING (KM):

4346.8331

5F. UTM EASTING (KM):

442.3767

5G. UTM ZONE:

17

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED:

Charles R. Hill

6B. TITLE:

SHE Manager

6C. TELEPHONE:

(304) 863-2202

6D. FAX:

(304) 863-2190

6E. E-MAIL:

Charles-R.F.Hill-1@dupont.com

7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY):

107 - 00001

7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19
AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED
WITH THIS PROCESS (FOR AN EXISTING FACILITY ONLY):

**R13-0985
R30-10700001 Part 5 of 14**

7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST:

No

8A. TYPE OF EMISSION SOURCE (CHECK ONE):

☐ NEW SOURCE

☐ ADMINISTRATIVE UPDATE

☐ MODIFICATION

☒ OTHER (PLEASE EXPLAIN IN 11B)

8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE
APPLICANT'S CONSENT TO UPDATE THE EXISTING
PERMIT WITH THE INFORMATION CONTAINED HEREIN?

☒ YES

☐ NO

9. IS DEMOLITION OR PHYSICAL RENOVATION AT AN EXISTING FACILITY INVOLVED?

☐ YES

☒ NO

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE:

As Built

10B. DATE OF ANTICIPATED START-UP:

As Built

11A. PLEASE PROVIDE A **DETAILED PROCESS FLOW DIAGRAM** SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS **ATTACHMENT B**.

11B. PLEASE PROVIDE A **DETAILED PROCESS DESCRIPTION** AS **ATTACHMENT C**.

12. PLEASE PROVIDE **MATERIAL SAFETY DATA SHEETS (MSDS)** FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS **ATTACHMENT D**. FOR CHEMICAL PROCESSES, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.

13A. REGULATED AIR POLLUTANT EMISSIONS:

⇒ **FOR A NEW FACILITY**, PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ **FOR AN EXISTING FACILITY**, PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.

| POLLUTANT | HOURLY PTE (LB/HR) | YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON |
|-------------------------|--------------------|--|
| PM | Not Applicable | 0.00034 |
| PM ₁₀ | Not Applicable | 0.00034 |
| VOCs | Not Applicable | 0.00034 |
| CO | 0 | 0 |
| NO _x | 0 | 0 |
| SO ₂ | 0 | 0 |
| Pb | 0 | 0 |
| HAPs (AGGREGATE AMOUNT) | 0 | 0 |
| TAPs (INDIVIDUALLY)* | 0 | 0 |
| OTHER (INDIVIDUALLY)* | 0 | 0 |

* ATTACH ADDITIONAL PAGES AS NEEDED

13B. PLEASE PROVIDE ALL SUPPORTING CALCULATIONS AS ATTACHMENT E.

CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).

14. CERTIFICATION OF DATA

I, JAY VALVO (TYPE NAME) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A **RESPONSIBLE OFFICIAL** ** (PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: _____

TITLE: PLANT MANAGER

DATE: 10 / 20 / 16

** THE DEFINITION OF THE PHRASE 'RESPONSIBLE OFFICIAL' CAN BE FOUND AT 45CSR13, SECTION 2.23.

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

☒ **ATTACHMENT A** ☒ **ATTACHMENT B** ☒ **ATTACHMENT C** ☐ **ATTACHMENT D** ☒ **ATTACHMENT E**

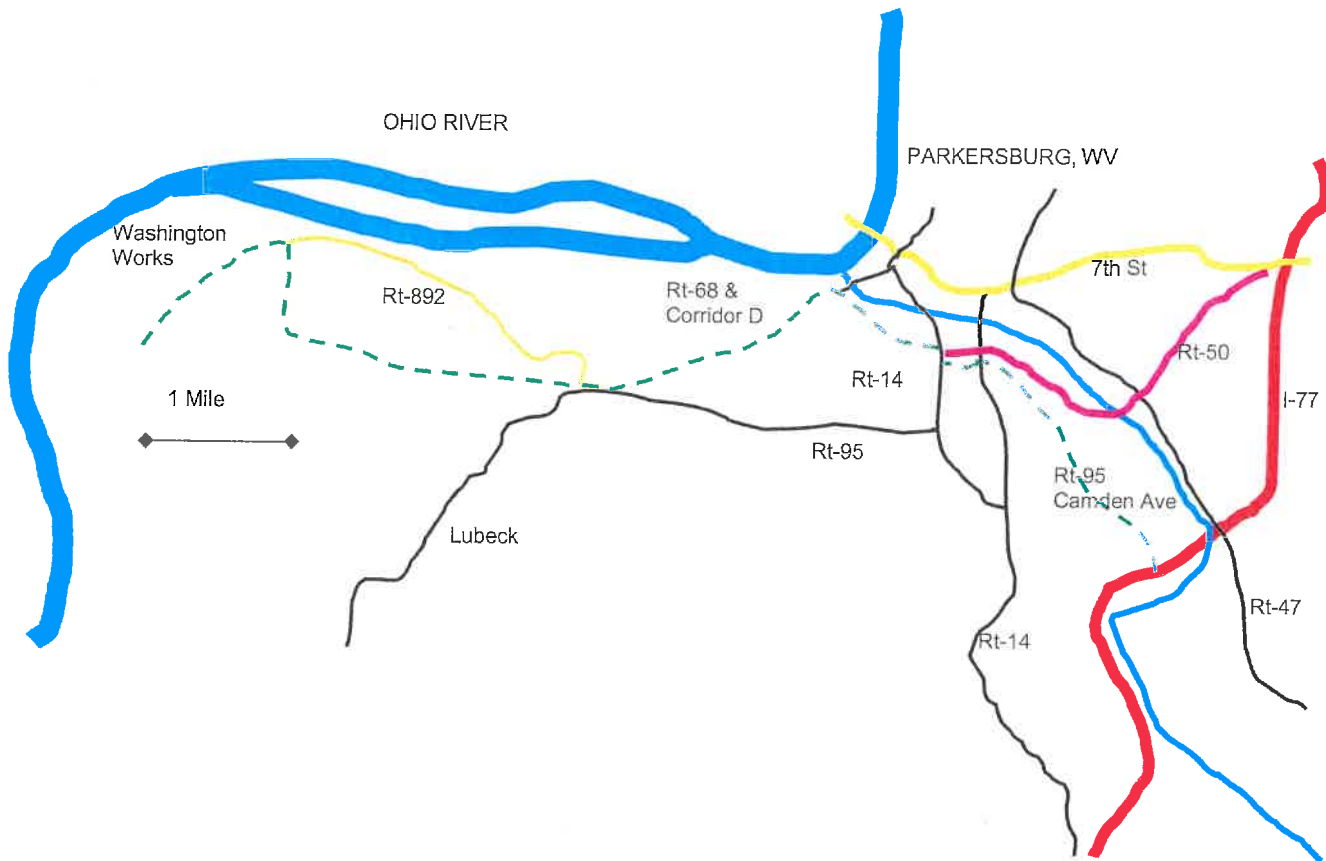
RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

www.dep.wv.gov/daq

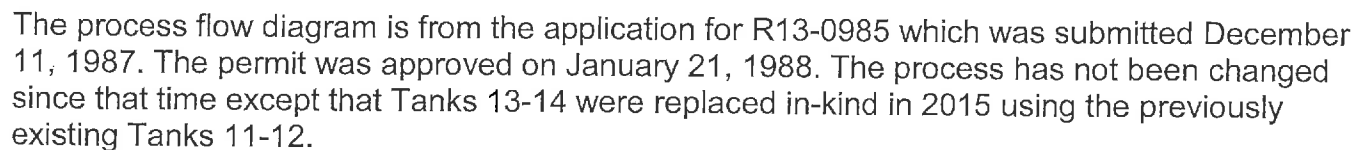
ATTACHMENT A

MAP to the Facility

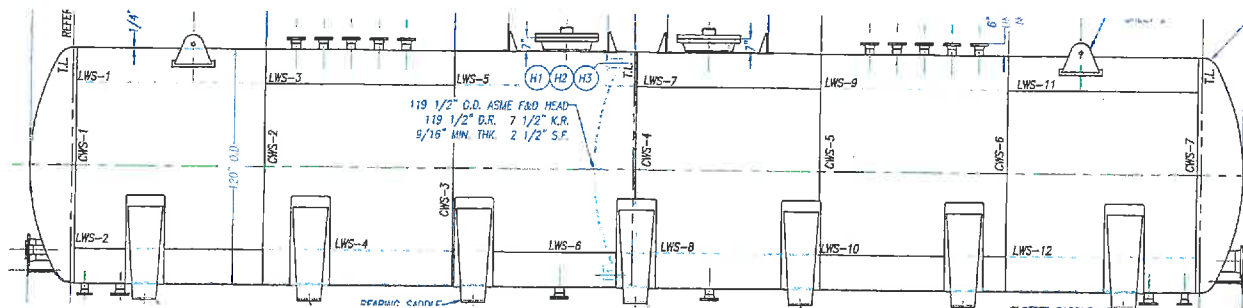


From Interstate 77, take exit for Rt-95/Camden Avenue.
Proceed West until intersection with Rt-14 then turn right (north).
After about 1/4 mile turn left onto Corridor D Bypass entrance for US-50 West.
Follow the bypass to the exit just before the bridge.
Turn left (south) onto DuPont Rd, Rt-892.
Proceed approx. 1 mile to facility on right.

Process Flow Diagram



Tanks 11-12 are identical to the previous tanks 13-14. The vessel is a horizontal cylinder with two separate chambers separated by a wall at the mid-point. It is insulated with internal circulation and is temperature controlled at 70C. The vapor space is inerted using nitrogen. The conservation vent is set at +0.826 psia and -0.125 psia.



ATTACHMENT C

Process/Project Description

The purpose of this request is to provide corrected identification for the tanks that were replaced in-kind for permit R13-0985 and for Title V permit R30-10700001 Part 5 of 14. The emission unit ID in both permits is 155-T14S. We propose that the change does not require a change to R13-0985 but we propose that the emission unit descriptions in the Title V permit should be updated to reflect the use of the replacement tanks.

A permit determination request was submitted in 1998 to recalculate the emissions from the unit, including the tanks, to describe the emitted material 1,6-hexanediamine, (hexamethylene diamine or HMD) as a particulate, consistent with the emitted form for this high boiling point chemical. The revised calculation also more appropriately addressed the vapor pressure for HMD and showed reduced potential emissions. Permit determination PD98-172 was issued on August 28, 2001 declared that no change to the permit was necessary but listed the revised potential emissions.

The annual limit expressed in R13-0985 for emission point 155-T14S was 267 lb/year (0.14 tons/year) of HMD. This estimate was based on the partial pressure of HMD expected and the volumes of salt solution transferred through the vessels. The estimate in the 1998 permit determination was reduced to 0.45 lb/yr (0.00023 tpy) based on use of EPA's AP-42 then current tank calculations. The present estimated emissions are 0.68 lb/yr (0.00034 tpy), based on the current operating conditions and use of EPA's Tanks 4.09 software application.

NSPS Subpart Kb for storage tanks does not apply to the replacement of this vessel. Although the combined capacity of the two compartments (29,800 gal or 110.5 m³) is above the volume threshold of 75 cubic meters, the maximum true vapor pressure for the vessel (0.00013 psia or 0.0009 kPa) is below the applicability threshold of 15.0 kPa.

ATTACHMENT E

Calculations

The inputs calculated below were used in US EPA Tanks 4.09 estimation tool.

HMD Emission Calculations for Tanks 11-12

Mol Wt

HMD 116.2

DDDA 230.3

Salt 346.5

At pH=8 the solution will have 16 equivalents of HWM per 10⁶ grams of salt in solution.

Mol Ratio at 16 eq/megagram

16 eq HMD per 10⁶ g salt * [1 mol HMD per 2 equiv] * 346.5 g per mol salt

mol ratio 0.002772

Convert to 45% solution

Salt conc 45%

mol fract 0.0012474

Partial pressure

HMD @ 70C 0.106 psia DIPPR database (2014)

$p = p_i \cdot x_i$ (VP 100%)(mol fract)

p 0.000132224

Turnovers

=6000 * 8760 hrs / 9.05 lb/gal / 29200 gal

198.8950276

Turnovers 200

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification
 User Identification: Tank 11-12
 City: Charleston
 State: West Virginia
 Company: DuPont
 Type of Tank: Horizontal Tank
 Description: 6,12 salt Horizontal Heated

Tank Dimensions
 Shell Length (ft): 48.00
 Diameter (ft): 10.00
 Volume (gallons): 28,200.00
 Turnovers: 200.00
 Net Throughput(gal/yr): 5,640,000.00
 Is Tank Heated (y/n): N
 Is Tank Underground (y/n): N

Paint Characteristics
 Shell Color/Sha: Aluminum/Di:use
 Shell Condition: Good

Breather Vent Settings
 Vacuum Settings (psig): -0.13
 Pressure Settings (psig): 0.83

Metereological Data used in Emissions Calculations: Charleston, West Virginia (Avg Atmospheric Pressure = 14.25 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 11-12 - Horizontal Tank
Charleston, West Virginia

| Material/Component | Name | Daily Liquid Surf. Temperature (deg F) | | | Liquid Bulk Temp (deg F) | Vapor Pressure (psia) | | | Vapor Mol. Weight | Liquid Mass Fract. | Vapor Mass Fract. | Mol. Weight | Basis for Vapor Pressure Calculations |
|--------------------|------|--|-------|-------|--------------------------|-----------------------|--------|--------|-------------------|--------------------|-------------------|-------------|---------------------------------------|
| | | Avg. | Min. | Max. | | Avg. | Min. | Max. | | | | | |
| 6,12 Salt at pH 9 | All | 62.37 | 53.24 | 71.30 | 57.56 | 0.0001 | 0.0001 | 0.0001 | 119.0000 | | | 119.00 | |

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 11-12 - Horizontal Tank
Charleston, West Virginia

| | |
|--|----------------|
| Annual Emission Calculations | |
| Standing Losses (lb): | 0.0077 |
| Vapor Space Volume (cu ft): | 2,401.2178 |
| Vapor Density (lb/cu ft): | 0.0006 |
| Vapor Space Expansion Factor: | 0.0033 |
| Vermed Vapor Saturation Factor: | 1.0000 |
| Tank Vapor Space Volume: | |
| Vapor Space Volume (cu ft): | 2,401.2178 |
| Tank Diameter (ft): | 10.0000 |
| Effective Diameter (ft): | 24.7278 |
| Vapor Space Height (ft): | 5.0000 |
| Tank Shell Length (ft): | 46.0000 |
| Vapor Density | |
| Vapor Density (lb/cu ft): | 0.0006 |
| Vapor Molecular Weight (lb/lb-mole): | 116.0000 |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia): | 0.0001 |
| Daily Avg. Liquid Surface Temp. (deg. R): | 522.0370 |
| Daily Average Ambient Temp. (deg. F): | 64.9833 |
| Ideal Gas Constant R (psia cu ft / (lb-mole-deg R)): | 10.731 |
| Liquid Bulk Temperature (deg. R): | 517.2533 |
| Tank Paint Solar Absorptance (Shall): | 0.0000 |
| Daily Total Solar Insolation Factor (Btu/sq ft-day): | 1,250.5726 |
| Vapor Space Expansion Factor | |
| Vapor Space Expansion Factor: | 0.0032 |
| Daily Vapor Temperature Range (deg. R): | 36.5138 |
| Daily Vapor Pressure Range (psia): | 0.0000 |
| Weather Venti Frost Setting Range (psia): | 0.9910 |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia): | 0.0001 |
| Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia): | 0.0001 |
| Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia): | 0.0001 |
| Daily Avg. Liquid Surface Temp. (deg R): | 522.0370 |
| Daily Min. Liquid Surface Temp. (deg R): | 512.9028 |
| Daily Max. Liquid Surface Temp. (deg R): | 531.1825 |
| Daily Ambient Temp. Range (deg. R): | 21.5333 |
| Vermed Vapor Saturation Factor | |
| Vermed Vapor Saturation Factor: | 1.0000 |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia): | 0.0001 |
| Vapor Space Height (ft): | 5.0000 |
| Working Losses (lb): | |
| Working Losses (lb): | 0.0742 |
| Vapor Molecular Weight (lb/lb-mole): | 116.0000 |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia): | 0.0001 |
| Annual Net Turnover (gal/yr): | 5,640,000.0000 |
| Annual Turnovers: | 200.0000 |
| Turnover Factor: | 0.5167 |
| Tank Diameter (ft): | 10.0000 |
| Working Loss Product Factor: | 1.0000 |
| Total Losses (lb): | 0.0819 |

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 11-12 - Horizontal Tank
Charleston, West Virginia

| Components | Losses(lbs) | | |
|-------------------|--------------|----------------|-----------------|
| | Working Loss | Breathing Loss | Total Emissions |
| 6,12 Salt at pH 8 | 0.67 | 0.01 | 0.58 |